

04 - 658

AMENDMENT NUMBER 1  
TO THE  
MEMORANDUM OF AGREEMENT  
BETWEEN  
THE DEPARTMENT OF DEFENSE  
OF  
THE UNITED STATES OF AMERICA  
AND  
THE FEDERAL MINISTRY OF DEFENSE OF THE  
FEDERAL REPUBLIC OF GERMANY  
FOR THE VECTORING EXTREMELY SHORT TAKE OFF AND LANDING (ESTOL)  
CONTROL TAILLESS OPERATION RESEARCH (VECTOR) TECHNOLOGY  
DEMONSTRATION PROJECT

Certified to be a true copy



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## PREAMBLE

1. The purposes of Amendment Number 1 to the Memorandum of Agreement (MOA) for the Vectoring Extremely Short Take Off and Landing (ESTOL) Control Tailless Operation Research (VECTOR) Technology Demonstration Program are to:

- a. Remove references to Swedish participation in the VECTOR Program;
- b. Replace the term "Project" with the term "Program" wherever it appears in this MOA;
- c. Replace the phrase "the Secretary of Defense, on behalf of the Department of Defense" with the phrase "the Department of Defense" wherever it appears in this MOA;
- d. Replace the phrase "the Federal Minister of Defense of the Federal Republic of Germany" with the phrase "the Federal Ministry of Defense of the Federal Republic of Germany" wherever it appears in this MOA;
- e. Modify the scope of work to reflect a Vector Program which only involves the United States and Germany; and
- f. Increase the Cost Ceiling, consisting of financial and non-financial contributions, of the MOA.

2. Accordingly, the Department of Defense of the United States of America and the Federal Ministry of Defense of the Federal Republic of Germany have agreed as follows:

## AMENDMENT

The MOA for the Vectoring Extremely Short Take Off and Landing (ESTOL) Control Tailless Operation Research (VECTOR) Technology Demonstration Project is hereby amended as follows:

1. Replace the term "Project" with the term "Program" wherever it appears in the MOA.
2. Replace the phrase "the Secretary of Defense, on behalf of the Department of Defense" with the phrase "the Department of Defense" wherever it appears in this MOA.
3. Replace the phrase "the Federal Minister of Defense of the Federal Republic of Germany" with the phrase "the Federal Ministry of Defense of the Federal Republic of Germany" wherever it appears in this MOA.

### 4. TABLE OF CONTENTS

- a. Delete the reference to Annex A (Financial Matters).

### 5. PREAMBLE

- a. Subparagraph five, at the end thereof, add the word "and" after the words "...and Flight Test Program;".
- b. Subparagraph six, at the end thereof, delete the word "and" after the words "... benefits of cooperation in the VECTOR Program;".
- c. Subparagraph seven, delete the entire subparagraph.

### 6. ARTICLE I: DEFINITIONS

- a. In the definition of "Third Party", delete the sentence, "For the purposes of this definition, the Forsvarets Materielverk of the Kingdom of Sweden is not a Third Party; and any Contractor incorporated in the Kingdom of Sweden is not a Third Party;".
- b. In the definition of "VECTOR Program," replace the existing definition with the following: "A collaborative effort between the U.S. DOD and the German MOD to demonstrate VECTOR technologies using the X-31 platform;".
- c. Delete the definition for "VECTOR Project" in its entirety.

- d. Delete the definition for "VECTOR Project Plan" in its entirety.

## 7. ARTICLE II (OBJECTIVE(S))

- a. Paragraph 2.1. Replace the first sentence with "The objective of the VECTOR Program is to perform a technology demonstration program for an integrated flight, engine, and multiaxisymmetric thrust vectoring control system, and an Advanced Air Data System (AADS) to achieve reduced tail/directional control and ESTOL flight, and AADS demonstration in the high angle-of-attack flight regime using the X-31 aircraft as a test bed."
- b. Paragraph 2.1. Second sentence, replace the first word, "This", with the word "The".
- c. Paragraph 2.1. Second sentence, delete the word "system" after the words "aircraft thrust vectoring" and replace it with the words "and advanced air data systems".
- d. Paragraph 2.1. Delete the last two sentences.
- e. Paragraph 2.2. Delete the paragraph in its entirety.

## 8. ARTICLE III (SCOPE OF WORK)

- a. Paragraph 3.1. After the words "multiaxisymmetric thrust vectoring", delete the words "nozzle (MTVN)".
- b. Paragraph 3.2. After the words "Within the VECTOR Program Plan" delete the words "and as specified in the VECTOR Project Plan,"
- c. Paragraph 3.2.1.1. After the words "facilities; develop", delete the words "and maintain" and replace with the words "maintain and support".
- d. Paragraph 3.2.1.1. After the words "clearance; perform", delete the words "VECTOR Project configuration management as part of the".
- e. Paragraph 3.2.1.2. After the words "computer suite", replace the semi-colon with a period, and delete the rest of the sentence.
- f. Paragraph 3.2.2.1. Replace entire sentence with "Provide an AADS, and AADS aircraft integration and engineering support for flight testing."
- g. Paragraph 3.2.2.2. Second sentence, after the words "tail/directional stability control" replace the comma with the word "and", and delete the phrase "and MTVN".
- h. Paragraph 3.2.2.3. After the word "Provide", insert the words "simulation hardware and software rehosting and".

- i. Paragraph 3.2.3.2. Replace the word "MTVN" with the words "thrust vectoring".
- j. Paragraph 3.2.3.4. After the words "aerodynamic performance" replace the word "analysis" with the words ", stability and control, and handling qualities analyses".
- k. Add a new paragraph 3.2.3.7., as follows: "3.2.3.7. Compile and integrate control laws and software code for each aircraft modification or flight test demonstration for AADS, reduced tail/directional stability control and ESTOL using thrust deflection vanes."
- l. Add a new paragraph 3.2.3.8., as follows: "3.2.3.8. Develop and maintain manned simulation capabilities."

#### 9. ARTICLE IV: MANAGEMENT (ORGANIZATION AND RESPONSIBILITY)

- a. Paragraph 4.1. Replace the current paragraph with the following: "4.1. The Parties recognize that successful performance of the VECTOR Program necessitates U.S. DOD and German MOD participation in an executive management organization established under this Agreement. Accordingly, the Parties agree that there shall be a VECTOR Program Steering Committee (SC) which shall consist of U.S. DOD and German MOD representatives. This SC shall operate in accordance with the terms and conditions of this Agreement."
- b. Paragraph 4.2. First sentence, after the words "the Parties", delete the words "and the FMV".
- c. Paragraph 4.3. First sentence, after the words "each Party", delete the words "and a representative appointed by the FMV".
- d. Paragraph 4.4.2. Replace the words "and Project Plans" with the word "Plan".
- e. Paragraph 4.4.3. Delete the words "and Annex A (Financial Matters)".
- f. Paragraph 4.5. Third sentence, replace the word "fur" with the word "für".
- g. Paragraph 4.7.2. Replace the existing paragraph with "4.7.2. Preparing and submitting to the SC for approval a Program Plan."
- h. Paragraph 4.7.3. Delete the word "Project and" and replace the word "Plans" with the word "Plan".
- i. Paragraph 4.7.4. Delete the words "and Annex A (Financial Matters)".
- j. Paragraph 4.7.6. Delete the words "and its Annex".
- k. Delete paragraph 4.7.10. in its entirety.

#### 10. ARTICLE V: FINANCIAL PROVISIONS

- a. Paragraph 5.1. First sentence, replace "\$63.5M FY97" with "\$88.72M Then Year".
- b. Paragraph 5.3. In the "Percentage Share" column, replace "44%" with "50%" and "56%" with "50%".
- c. Paragraph 5.4. Delete the last sentence "Both financial and non-financial contributions are detailed in Annex A (Financial Matters).", and replace it with "The PMs shall be responsible for establishing the detailed financial management procedures under which the Program shall operate. These procedures shall be detailed in the Financial Management Policies and Procedures (FMPP) document prepared by the PMs and subject to the approval of the SC. The FMPP document shall contain an estimated schedule for the Parties' contributions."

#### 11. ARTICLE VIII: DISCLOSURE AND USE OF PROGRAM INFORMATION

- a. Delete Paragraph 8.2. in its entirety and renumber all subsequent paragraphs accordingly.

#### 12. ARTICLE XVIII: AMENDMENTS

- a. Paragraph 18.1. Delete the second sentence in its entirety.

#### 13. ARTICLE XIX: TERMINATION, ENTRY INTO FORCE, AND DURATION

- a. Paragraph 19.5. First sentence, delete "and one Annex,".
- b. Delete the second and third sentences in their entirety.

#### 14. ANNEX A: FINANCIAL MATTERS

- a. Delete the entire Annex.

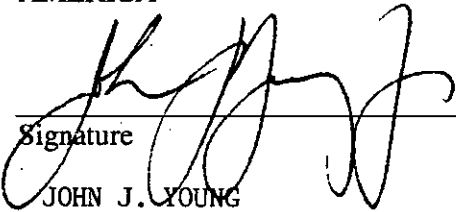
## ENTRY INTO EFFECT

This Amendment will enter into effect upon signature of both Parties and will remain in effect for the same period as the MOA which it amends. Unless specifically amended herein, all other provisions of the MOA for the Vectoring Extremely Short Take Off and Landing (ESTOL) Control Tailless Operation Research (VECTOR) Technology Demonstration Project remain unchanged.

IN WITNESS WHEREOF, the undersigned, being duly authorized by their governments, have signed this Amendment.

DONE, in duplicate, in the English language.

FOR THE DEPARTMENT OF DEFENSE  
OF THE UNITED STATES OF  
AMERICA

  
Signature

JOHN J. YOUNG

Name  
ASSISTANT SECRETARY OF THE NAVY  
(RESEARCH, DEVELOPMENT AND ACQUISITION)

Title

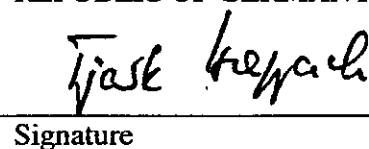
31 AUGUST 2002

Date

WASHINGTON D.C.

Location

FOR THE FEDERAL MINISTRY OF  
DEFENSE OF THE FEDERAL  
REPUBLIC OF GERMANY

  
Signature

TJARK HAPPACH

Name

Ministerialrat

Title

12. September

Date

Bonn

Location